

Application No. 10/580,839  
Declaration under 37 CFR 1.132

DOCKET NO: 291090US0X PCT  
IN THE UNITED STATES PA1

IN RE APPLICATION OF

BERNARD JEAN-LUC ET AL

EXAMINER: ZHU, WEIPING

SERIAL NO: 10/580,839

FILED: DECEMBER 19, 2006

: GROUP ART UNIT: 1793

FOR: REFRACTORY ALLOY AND  
MINERAL WOOL PRODUCTION  
METHOD

DECLARATION UNDER 37 CFR 1.132

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Christophe Liebaut who declares and states that:

1. I am one of the inventors of the invention described in the above-identified application.
2. In 1984, I received a docteur/ingénieur degree from Institut National Polytechnique de Lorraine.
3. From 1988 to 1992, I worked as a Research Engineer on Co and Ni Superalloys and from 1993 to 2003, as a Foundry Manager on those same alloys.
4. From 2004 to now, I've been working on Co and Ni Superalloys at Saint-Gobain Seva as "Alloy's and transformation" Business Manager.

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5. The following experiments were carried out by me or under my direct supervision and control, which are commensurate with the Examples recited and illustrated in the specification of the above-identified application.

#### **EXAMPLE A**

A molten charge, with composition as represented in Table 1 below, was prepared via the induction melting technique under an inert atmosphere, using argon, and was subsequently shaped by simple casting in a sand mold.

The casting was followed by a heat treatment comprising a stage of solution forming heat treatment for 2 hours at 1200° C and a stage of precipitation of the secondary carbides for 10 hours at 1000° C, each of these stationary phases finishing with cooling with air to ambient temperature.

#### **EXAMPLE B**

A molten charge, with composition as represented in Table 1 below, was prepared in the same manner as Example A.

**TABLE 1**

	Co	Ni	C	Cr	Ti	Ta
EXAMPLE A*	base	8.2	0.4	27.9	0.4	2.9
EXAMPLE B*	base	8.5	0.4	28.5	0.6	2.9

\*The test examples included less than 3% of Fe, Si, and Zr, Mn and other impurities

It was not possible to obtain exactly the same composition of alloys, but the resulting alloys from example A and B exhibit very similar composition. The very small variance of Co, Ni and Cr would however not be expected to affect the properties of the invention and comparative examples, to the best of my knowledge.

The ability of these two alloys to be used as a device (spinner) for the shaping of molten glass was evaluated in the application to the manufacture of glass-wool. A

fiber-drawing spinner with a diameter of 400 mm and of a conventional shape was manufactured by casting the above composition of alloys A and B under the same conventional techniques. The thus-obtained spinners were then used under industrial conditions for the fiber-drawing of a composition of glass with high ferric iron level, in accordance with that described in the specification or in WO 00/17117, at a high temperature of 1200°C. For example B, two different spinners, casted from the same initial alloy, were tested.

The spinners are used until their shutdown is decided upon following the ruin of the spinner indicated by visible deterioration or by the quality of fibers produced become unsatisfactory. The life time (in hours) of the spinners thus measured is reported in Table 2.

**TABLE 2**

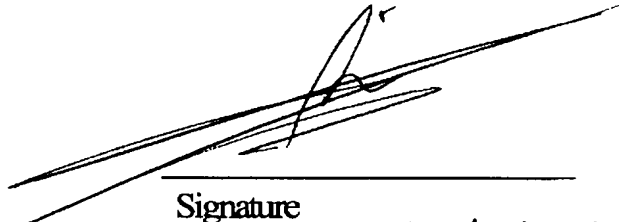
	SPINNER'S LIFETIME	AVERAGE
EXAMPLE A	43 hours	43 hours
EXAMPLE B (first spinner)	99 hours	135 hours
EXAMPLE B (second spinner)	171 hours	

6. The above results, shown in Table 2 for the alloys of Test Examples A and B, clearly show the unexpected beneficial effects and superior properties of the example B alloy, which is able to withstand the conditions of the drawing at least twice longer than the example A. Unexpectedly, the comparison of example A and B shows that a minimal content of about 0,5% by weight of Titanium in the alloys according to the instant invention is critical for the gain of the sought properties.

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7. The undersigned petitioner declare further that all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

2020-03-19  
Date

  
Signature  
Christopher L. Isaac